

REMARKS

The foregoing amendments and these remarks are in response to the Office Action dated April 23, 2003. At the time of the Office Action, claims 1-12 were pending in the application. Claims 1-9, and 11-12 were rejected under 35 U.S.C. § 102(b). Claim 10 was rejected under 35 U.S.C. § 103(a).

Prior to addressing the Examiner's rejection on art, a brief review of Applicant's invention is appropriate. There exists a basic problem with producing video trick modes digital video data stored on a magnetic tape medium. Digital video data stored on a tape medium is comprised of coded pictures that in many instances cannot be decoded independently from one another. For example, in the commonly used MPEG coding scheme, three types of pictures are used, namely I, B and P type pictures. I pictures can be decoded independently from the other types of pictures. However, in order to successfully decode B type or P type pictures, at least one I picture must also be decoded.

The foregoing limitation is not a problem during normal video playback operation because the tape head is synchronized with the tape speed and all of the pictures are read from the tape for the purposes of decoding. However, trick mode playbacks generally involve moving the tape past the tape head at a faster or slower than normal speed. When this happens, a conventional helical scan playback head will no longer properly read from the tape all of the pictures associated with the video presentation. Consequently, certain portions of the track (including I pictures) are not scanned by the playback head due to the tape speed difference. Since the B type and P type pictures cannot be decoded independently from I pictures, the missing I picture data can cause the trick mode playback operation to fail.

The invention solves this problem by storing, at predetermined portions of the tape track, special trick mode playback data. The predetermined portions of the tape track are advantageously selected so that they correspond to regions of the tape track that will be read by a conventional helical scan playback head at various tape speeds corresponding to a plurality of different trick modes. During a trick mode playback, the trick mode data is read by the conventional helical scan playback head whereas the normal play data is skipped. Significantly amended claims 1 and 8

recite that the trick mode data corresponds to an image decoded from at least one frame in each group of pictures (GOP) contained in the digital signal.

I. Claim Rejections on Art

Turning now to the Examiner's rejection, it is noted that Claims 1-9, and 11-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,377,051 to Lane et al ("Lane"). Lane discloses multiple embodiments for both a receiver and a digital video recorder with trick play enhancement. More particularly, Lane describes a system in which a digital VTR produces an output video data stream to a receiver that includes (1) normal play video data, (2) trick play video data, and (3) trick play video data processing commands for processing the trick play video data. Notably, the trick play video data in Lane includes only a subset of the normal play video data. See col. 29, lines 13-15; col. 39, lines 23-56. Rather than an image decoded from the digital signal. In the VTR of Lane, Lane teaches the selectively recording of only part or parts from a specific picture contained in a group of pictures, this is unlike applicant's arrangement where a trick play signal is formed from a frame decoded from the digital signal.

In Lane, a trick play video processor is provided in the receiver that can be switched between normal play error concealment mode and a trick play error concealment mode. The processor employs special processing specifically intended for concealing errors associated with trick play, including missing image data. More particularly, the subset of normal play video data is processed to for use during trick play. The video processor includes temporal and spatial filtering for achieving this result. This permits the receiver to display data supplied from the VTR during trick mode playback in a manner that provides higher quality images than would otherwise be possible.

Applicant's invention, as recited in amended claims 1 and 8, operates in a very different manner as compared to Lane. In Applicant's invention the input data stream is recorded as the normal speed playback signal and in addition input data stream is decoded to form pictures derived from at least one of I, P or B frames. The decoded I, P or B frame images are processed by re-MPEG encoding to form a corresponding "trick play" frame for recording as a trick play signal. See Applicant's specification, p. 7, lines 9 - 22, and page 9, line 19 - page 10, line 4. Thus, each

recorded GOP contains a corresponding "trick play" processed image. During trick play reproduction, these trick play images are decoded to provide images in which motion is smoothly portrayed. Accordingly, claims 1 and 8 are believed to be distinguishable from the system described in Lane which drops all or part of entire pictures when storing trick mode data and makes no suggestion that the input signal be decoded to image frames for MPEG encoding and recording as a trick play signal. The remaining claims 2 - 7 and 9 - 12 are believed to be allowable at least by virtue of their dependence upon an allowable base claim.

Applicants believe that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance.

Respectfully submitted
Tomoki Saeki.

1/29/2004

By: Francis A. Davenport
Francis A. Davenport
Reg. No. 36,316
(609)-734-6805

Thomson Multimedia Licensing, Inc.
Patent Operations
Two Independence Way
P.O. Box 5312
Princeton, NJ 08453-5312